CLAIMS

1. A method for manufacturing a clad material, comprising the steps of:

continuously supplying molten metal into a gap between a pair of cooling rollers to cast a core material; and

cladding skin materials on both surfaces of the core material with hot rolling by continuously supplying the skin materials on peripheral surfaces of the cooling rollers so that the skin materials prevent direct contact between the cooling rollers and the molten metal,

wherein the skin materials are supplied so as to come into contact with the peripheral surfaces of the cooling rollers, and

wherein a contact distance (L1) from a contact starting point (P1) where the skin material begins to come into contact with the cooling roller to a meeting point (P2) where the skin material begins to come into contact with the molten metal is set to 100 times or more of a thickness (t1) of the skin material.

2. The method for manufacturing a clad material as recited in claim 1, wherein the core material and the skin material are made of aluminum or its alloy.

3. The method for manufacturing a clad material as recited in claim 1, wherein the thickness (t1) of the skin material is 20 to 400 μm.

4. The method for manufacturing a clad material as recited in claim 2, wherein at least one of the skin materials is made of Al-Si series alloy.

5. The method for manufacturing a clad material as recited in claim 4, wherein the Al-Si series alloy consists essentially of

Si: 5 to 15 mass%,

Fe: 0.05 to 0.6 mass%,

Cu: 0.01 to 0.6 mass%,

Mn: 0.01 to 0.8 mass%,

Mg: 0.01 to 0.2 mass%,

Ti: 0.01 to 0.2 mass%, and

the balance being Al and inevitable impurities.

6. The method for manufacturing a clad material as recited in claim 2, wherein at least one of the skin materials is made of Al-Zn series alloy.

7. The method for manufacturing a clad material as recited in claim 6, wherein the Al-Zn series alloy consists essentially of

Si: 0.05 to 0.6 mass%,

Fe: 0.05 to 0.6 mass%,

Cu: 0.01 to 0.6 mass%,

Mn: 0.01 to 0.8 mass%,

Mg: 0.01 to 0.2 mass%,

Ti: 0.01 to 0.2 mass%,

Zn: 0.35 to 8.5 mass%, and

the balance being Al and inevitable impurities.

8. The method for manufacturing a clad material as recited in claim 1, wherein a thickness (t2) of the skin material after hot roll cladding is 0.5 to 8 mm.

9. The method for manufacturing a clad material as recited in claim 2, wherein the molten metal to become the core material consists essentially of

Si: 0.05 to 1.5 mass%,

Fe: 0.05 to 2 mass%,

Cu: 0.05 to 0.8 mass%,

Mn: 0.15 to 2.8 mass%,

at least one of elements selected from the group consisting of Cr: 0.03 to 0.7 mass%, Mg: 0.01 to 0.2 mass%, Ti: 0.01 to 0.3 mass%, and Zn: 0.01 to 1.5 mass%, and

the balance being Al and inevitable impurities.

10. The method for manufacturing a clad material as recited in claim 9, wherein the molten metal further includes at least one of elements selected from the group consisting of Zr: 0.15 to 1.5 mass%, V: 0.03 to 1.5 mass%, and Sc: 0.02 to 0.5 mass%.

11. The method for manufacturing a clad material as recited in any one of claims 1 to 10, wherein cold rolling is performed after the hot roll cladding.

12. A clad material in which skin materials are clad on both surfaces of a core material, wherein the clad material is manufactured by the steps of continuously supplying molten metal into a gap between a pair of cooling rollers to cast a core material, and cladding skin materials on both surfaces of the core material with hot rolling by continuously supplying the skin materials on peripheral surfaces of the cooling rollers so that the skin materials prevent direct contact between the cooling rollers and the molten metal, wherein the skin materials are supplied so as to come into contact with the peripheral surfaces of the cooling rollers, and wherein a contact distance (L1) from a contact starting point (P1) where the skin material begins to come into contact with the cooling roller to a meeting point (P2) where the skin material begins to come into contact with the molten metal is set to 100 times or more of a thickness (t1) of the skin material.

13. The clad material as recited in claim 12, wherein the clad material is cold rolled after the hot roll cladding.

14. The clad material as recited in claim 12, wherein an average spacing of a dendrite secondary arm spacing of the core

material formed by the heat roll cladding is 0.1 to 10 μm

15. The clad material as recited in any one of claims 12 to 14, wherein the clad material is heat exchanger component material.

16. An apparatus for manufacturing a clad material, comprising:

a pair of cooling rollers for continuously casting molten metal passing through a gap formed between the cooling rollers;

a molten metal supplying portion for supplying the molten metal to become a core material into the gap; and

a skin material supplying portion for supplying a skin material on a peripheral surface of the cooling roller and making the skin material come into contact with the peripheral surface of the cooling roller before the skin material joins the molten metal,

wherein the cooling rolls are rotated while continuously supplying the molten metal and the skin material to the cooling rolls to thereby continuously clad the skin materials to both surfaces of the core material.